

**ABSTRACT**

The present invention provides a novel approach to utilizing the results of genomic sequence information by computer-directed polynucleotide assembly based upon  
5 information available in databases such as the human genome database. Specifically, the present invention can be used to select, synthesize and assemble a novel, synthetic target polynucleotide sequence encoding a target polypeptide. The target polynucleotide can encode  
10 a target polypeptide that exhibits enhanced or altered biological activity as compared to a model polypeptide encoded by a natural (wild-type) or model polynucleotide sequence.